

U-CAAC Review of New Program Proposal

This form provides committee-wide feedback on the following proposed program.

Undergraduate

Graduate

College:

Proposal Name:

Proposer's Name and Email:

Reviewers:

1. **Rationale.**

Is the mission of the program well justified?

2. **Academic Standards/Compliance.**

Do the curriculum and student support provisions meet the academic and policy standards of the university?

3. **Overlaps.**

Are there perceived duplications with other UArizona programs? Conversely, could shared interests and emphases lead to collaborative or synergistic programs with other parts of the university? (These could take the form of co-ownership, co-delivered courses, shared faculty, shared facilities, etc.)

4. **Viability.**

Is the program likely to enroll enough students to meet UArizona benchmarks for productive programs? Is there plausible evidence to back up enrollment predictions and budget projections?

5. **Other feedback/comments.**

6. **Approval or Revisions Requested.**



New Academic Program Workflow Form

General

Proposed Name: Computational Social Science

Transaction Nbr: 00000000000248

Plan Type: Minor

Academic Career: Undergraduate

Degree Offered:

Do you want to offer a minor? N

Anticipated 1st Admission Term: Fall 2026

Details

Department(s):

SBSC

DEPTMNT ID	DEPARTMENT NAME	HOST
0418	School of Sociology	Y

Campus(es):

MAIN

LOCATION	DESCRIPTION
TUCSON	Tucson

Admission application terms for this plan: Spring: Y Summer: Y Fall: Y

Plan admission types:

Freshman: Y Transfer: Y Readmit: Y Graduate: N

Non Degree Certificate (UCRT only): N

Other (For Community Campus specifics): N

Plan Taxonomy: 30.7099, Data Science, Other.

Program Length Type: Program Length Value: 0.00

Report as NSC Program:

SULA Special Program:

Print Option:

Diploma: N

Transcript: Y Minor in Computational Social Science

Conditions for Admission/Declaration for this Major:

No special requirements

Requirements for Accreditation:

N/A

Program Comparisons

University Appropriateness

The proposed Computational Social Science minor directly aligns with the University of Arizona's mission to advance knowledge and prepare students for success in an increasingly data-driven world. As the 21st-century workforce demands professionals who can bridge traditional social science inquiry with computational methods and data analytics, this interdisciplinary program positions UA graduates at the forefront of emerging career opportunities in technology, policy, research, and industry. The University of Arizona is uniquely positioned within the Arizona University System to offer this program, leveraging our strong foundation in both social sciences and computational research, along with established faculty expertise across multiple departments. This minor directly supports the College of Social and Behavioral Sciences Strategic Plan, particularly Pillar 1: Student Engagement and Success, by ensuring our undergraduate students graduate being career-, community-, or graduate school-ready through exposure to cutting-edge methodological approaches that are increasingly essential given the growing ubiquity of social and behavioral data in policy analysis and data-driven decision making across sectors.

Arizona University System

NBR	PROGRAM	DEGREE	#STDNTS	LOCATION	ACCRDT
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Peer Comparison

Please see attached comparison chart

Resources

Library

Acquisitions Needed:

Physical Facilities & Equipment

Existing Physical Facilities:

This degree will use existing classes, faculty, and staff and therefore the current existing physical space is adequate.

Additional Facilities Required & Anticipated:

N/A

Other Support

Other Support Currently Available:

Sociology has a full staff including schedulers and advisors who are equipped to offer support for this minor.

Other Support Needed over the Next Three Years:

N/A

Comments During Approval Process

9/12/2025 11:31 AM

STEFFIMC

Comments
Approved.

9/16/2025 4:17 PM

MELANIECMADDEN

Comments
Approved.

9/16/2025 4:35 PM

DHERRING

Comments
Approved.



New Academic Program – Minor ([Undergraduate](#))
CURRICULAR INFORMATION

- I. **MINOR DESCRIPTION:** The Computational Social Science (CSS) minor equips students with the cutting-edge skills to analyze massive datasets and understand complex social phenomena in the digital age. This interdisciplinary program bridges the gap between social science and data science, training students to use computational tools to explore human behavior, social networks, and institutional patterns. Students will learn programming, gain hands-on experience with techniques such as machine learning and network analysis, and work with real-world social data. The curriculum not only focuses on technical proficiency but also emphasizes critical engagement with the social and ethical impacts of big data and algorithmic decision-making. This minor is ideal for students from any discipline who are curious about how data is reshaping our world and want to apply quantitative reasoning to pressing social questions. By combining computational training with social analysis, the CSS minor gives students a competitive edge in the job market, preparing them for diverse careers in technology, policy, business, marketing, and research.
- II. **JUSTIFICATION/NEED FOR THE MINOR:** The Computational Social Science (CSS) minor is designed to address a significant and growing demand in both academia and industry for professionals who can blend social scientific inquiry with advanced data analysis skills. The modern world generates unprecedented amounts of social data, and this program provides students with the essential theoretical and technical toolkit to analyze this "big data," preparing them for careers in data-driven policy making, market research, urban planning, and the tech sector.

The need for this minor is evidenced by strong student interest in the diverse set of existing courses that form its curriculum, which are drawn from Sociology, Political Science, Data Science, Geography, and Information Science. The projected enrollment growth from 10 to 30 students over the first three years is based on this existing demand for data-focused social science courses. Furthermore, the core introductory course, SOC 301A, is specifically designed to be accessible to students without a background in programming or math, widening the pipeline of students who can develop these valuable skills. By formalizing this curriculum, the university can provide a clear pathway for students to gain a competitive advantage in a labor market that increasingly values data literacy and the ability to interpret complex human behavior.

While positions in "Data Science" are rapidly growing, this minor offers a distinct and complementary skill set that is increasingly vital in the job market. Unlike a pure data science program, which focuses primarily on computational and statistical techniques, the Computational Social Science minor trains students to apply these tools to understand complex human behavior and societal patterns. This integrated approach prepares graduates for emerging roles that require not just technical proficiency, but also a deep, domain-specific understanding of social, political, and economic contexts. Employers in the tech sector, policy-making, and market research are recognizing the need for professionals who can go beyond the numbers to provide nuanced interpretations and ethically-informed insights into the data, giving our students a significant competitive advantage for these specialized, high-demand positions.

Labor market analyses were conducted using the Lightcast program to consider demand for the CSS minor both in terms of comparable degree programs and employment opportunities post-

graduation from the University of Arizona. Since Computational Social Science is a relatively new field within the social sciences, there are relatively few comparable programs identified by Lightcast to model our potential for growth. We reviewed two NAICS job classification codes – 30.799 Data Science and 45.0102 Research Methodology and Quantitative Methods – but acknowledge that both touch upon CSS, but do not fully capture the potential we see in this industry for University of Arizona undergraduates.

The U.S Bureau of Labor Statistics projects that employment of Data Scientists will grow some 36 percent from 2023 to 2033 at a rate considered much faster than all other occupations. These potential employment opportunities are well-paying positions, estimated to be near a median of \$112,000 a year. Jobs related to Research Methodology and Quantitative Methods fare slightly less positive, but in the 7 percent to 10 percent growth rate as well. The Lightcast estimates for job growth for Data Science includes a 10 percent growth estimate nationally and an 8 percent estimate for the Southwest region. Specific skillsets taught in the CSS minor, such as programing in Python and R, are in very high demand and are seen by the Lightcast program as rapidly growing in demand in published job advertisements.

III. VIABILITY: To support the proposed program, does the college envision sharing resources used by other programs, redeploying internal resources (consolidating existing minors, disestablishing other minors), etc.?

a. Summarize new resources required to offer the minor (may include additional faculty, staff, equipment, facilities, etc.):

No new resources are required to offer the Computational Social Science minor.

IV. PROJECTED ENROLLMENT: You will need to provide evidence to support the projection (i.e., student/alum surveys, enrollment in existing courses, peer programs, etc.).

Year 1	Year 2	Year 3
10	20	30

V. MINOR REQUIREMENTS: Complete the table below. All University of Arizona undergraduate minors require at least 18 units; graduate minors require at least 9 units. Note: information in this section must be consistent throughout the proposal documents and will be used to build the Academic Advisement Report (ADVIP) and Catalog Descriptions. Delete the EXAMPLE column before submitting/uploading.

Undergraduate Minor: (if this table does not apply, please delete).

Minimum total units required	18
Minimum upper-division units required	9
Total transfer units that may apply to minor	12

List any special requirements to declare/admission to this minor (completion of specific coursework, minimum GPA, interview, application, etc.)	NA
Minor requirements. List all required minor requirements including core and electives. Courses listed must include course prefix, number, units, and title. Mark new coursework (New). Include any limits/restrictions needed (house number limit, etc.). Provide course use form from home department for courses not owned by your department.	<u>Computational Social Science Core</u> Complete 3 courses (9 units): <i>Required:</i> - SOC 301A Introduction to Computational Social Science - SOC 374 Research in the Social Sciences <i>One Introductory Social Sciences Course Including but Not Limited To:</i> - SOC 101 Introduction to Sociology - SOC 150B1 Social Issues in America - SOC 150B2 Gender, Power, and Inequality - SOC 150C2 The Good Society - POL 201 American National Government - POL 202: International Relations <u>Inferential Statistics Core</u> Complete 1 course from the following (3 credits): - SOC 375 Quantitative Reasoning in Sociology (recommended for Sociology majors) - ISTA 116: Statistical Foundations of the Information Age (recommended for Information Science majors) - DATA 363: Introduction to Statistical Methods (recommended for Math or Data Science majors) <u>Methods Core</u> Complete 2 courses from the following (6 credits): <i>From College of Social & Behavioral Sciences</i> - SOC 430 Social Networks - SOC 301B: Advanced Computational Social Science - Pol 397B: The Origins of Data in Politics and Policy - POL 424: Politics in the Digital Age - POL 403: Political Networks - PA 472: Digital Research in Politics and Policy

	- GEOG 330: Introduction to Remote Sensing - GEOG 222: Working with Numeric, Spatial, and Visual Data - LING 388: Language and Computers - LING 408: Computational Techniques for Linguists - LING 438: Computational Linguistics - LING 439: Statistical Natural Language Processing <i>From College of Science</i> - DATA 201: Foundations of Data Science - DATA 375: Introduction to Statistical Computing - DATA 467: Introduction to Applied Linear Models - DATA 474: Introduction to Statistical Machine Learning <i>From College of Information Science</i> - ISTA 130: Computational Thinking and Doing - ISTA 320: Applied Data Visualization - ISTA 321: Data Mining and Discovery - ISTA 322: Data Engineering - ISTA 350: Programming Informatics Applications - ISTA 421: Introduction to Machine Learning - ISTA 455: Applied Natural Language Processing
Internship, practicum, applied course requirements (Yes/No). If yes, provide description.	No
Additional requirements (provide description)	NA
Any double-dipping restrictions (Yes/No)? If yes, provide description.	Yes, minor coursework may not double dip with another minor or major. Exceptions can be made for dual degree students utilizing courses in their major for one degree and minor in the second degree for up to six credits.

VI. NEW COURSES NEEDED: If new courses are required for the proposed program, [UA Course Add forms](#) must be submitted before/simultaneously with this proposal. List all course additions in progress in the table below. Add rows as needed.

No new courses are needed for the CSS minor.

- VII.** LEARNING OUTCOMES AND CURRICULUM MAP - Complete these tables as a summary of the learning outcomes from your assessment plan and an overview of where learning outcomes are addressed in the program. Use the examples below as models and refer to the explanations beneath each table. Additional resources are available from the [University Center for Assessment, Teaching and Technology](#).

Learning Outcomes

Learning Outcome #1: Apply computational techniques to analyze social behaviors, networks, and institutions, while critically evaluating data validity, methodological assumptions, and ethical considerations in computational research. (Knowledge of Computational Approaches to Social Phenomena)
Concepts: Computational methods in social science, social phenomena, methodological assumptions and data quality, ethics in computational research
Competencies: Computational thinking; critical analysis including synthetic, analytical, and comparative reasoning, data literacy
Assessment Methods: SOC 301A Final project (direct) and student exit survey (indirect)
Measures: Final Project: Score on the final project, which is evaluated based on an in-class presentation and a written submission. The evaluation focuses on how effectively students apply selected methods to investigate research questions and provide a narrative discussion of the results, including a reflection on the significance and limitations of their findings. Reflection Memos: The four 500-word reflection memos are evaluated on the student's ability to document and reflect on the project's progress, including any methodological challenges encountered and how the group plans to address them.
Indirect Measures: Measures also include responses to student exit survey.
Learning Outcome #2: Collect, process, and analyze large-scale social data using computational tools and models, and interpret results with attention to data bias, measurement errors, and algorithmic transparency. (Proficiency in Data-Driven Social Research)
Concepts: Large scale data collection and processing, analytical methods, sources of bias and error, machine learning algorithms, algorithmic transparency, ethical data practices
Competencies: Processing data, programming in R/Python, evaluating models, critical reasoning
Assessment Methods: Final project (direct) and student exit survey (indirect).
Measures: Final Project: Score on the final project, specifically the evaluation of the required R Markdown document. This document must be fully reproducible and include all data analysis steps with well-commented code, demonstrating the ability to analyze real-world social data. Coding Test: The score on the Week 4 test, which consists of ten short R code snippets and assesses a student's ability to read and interpret what the code does, rather than testing memorization
Indirect Measures: Measures also include responses to student exit survey.
Learning Outcome #3: Critically evaluate the social, political, and ethical impacts of computational methods--such as artificial intelligence, big data, and algorithmic decision-making--in research and policy, with particular attention to issues of social inequality, governance, knowledge production, the role of evidence, power structures, and ethical trade-offs (Critical Engagement with the Social Impact of Computational Methods)
Concepts: Social and political implications of AI; bias in computational decision-making, ethical issues related to big data and algorithmic decision-making; role of evidence, power structures, and ethical trade-offs in computational social science applications
Competencies: Critical analysis including synthetic, analytical, and comparative reasoning; ethical reasoning, evaluating evidence
Assessment Methods: Final Project: Evaluation of the in-class presentation and written report, which require an overview of the research's key findings and broader significance. The written submission must also contain a reflection on the significance and limitations of the findings and a statement of each member's contributions

Reflection Memos: Evaluation of the memos for thoughtful engagement with the collaborative process and for promoting accountability within the group, which includes addressing project challenges that may have social or ethical dimensions.

Measures: Score on the final project, evaluated through the in-class presentation and written R Markdown submission. The project requires students to present an overview of their key findings and broader significance, and the written report must contain a reflection on the significance and limitations of the findings.

Measures also include responses to student exit survey.

*Explanation: **Concepts** are the topics that students will learn in the program. **Competencies** are the skills they will learn. A **learning outcome** is their ability to apply the skills to the topics, or to use the skills and the topics together, in an observable way. The **assessment method** is where students will demonstrate the learning outcome, and a **measure** is how data will be pulled from the assessment method. Include both a direct and indirect assessment method and measurement for each learning outcome.*

Competencies and the learning outcomes need to reflect higher level learning: consider using verbs from the Application, Analysis, Synthesis, and Evaluation columns from this list when writing learning outcomes:

<https://arizona.app.box.com/s/orx6coex8607hlmenrql7dznzhzjicpit>. We recommend 2-3 Learning Outcomes for a minor.

Curriculum Map

	Course #SOC 374	Course #SOC 375	Course #SOC 301A
LO #1: Knowledge of Computational Approaches to Social Phenomena	I	I	R/M
LO #2: Proficiency in Data-Driven Social Research		I/R	R/M
LO #3: Critical Engagement with the Social Impact of Computational Methods	I		R/M

Explanation: The curriculum map lists the required courses for the program and indicates where each LO will be introduced (I), reinforced (R), and mastered (M). This is important to show that you are including adequate teaching of the skills and concepts to support the LOs. Each row (LO) should have at least one I, R, and M in it. Usually (but not always) there is more than one R. Usually (but not always) there is only one I and one M. Generally, Is come first, followed by Rs, and Ms are last. Each column (class) should have at least one letter in it, but not every box needs to be filled in.

VIII. CONTACTS AND ADMINISTRATION

UNDERGRADUATE (delete if n/a)

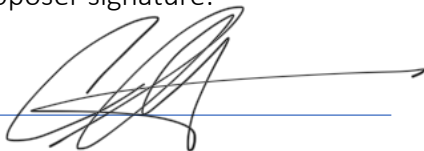
- List the name and contact information for the primary point of contact for the certificate: Charles Gomez, cjgomez@arizona.edu
- List the name and contact information for the person or persons who will serve in the role of Director of Undergraduate Studies (DUS) for the certificate (this is not always the same as the DUS for affiliated programs or head of the managing academic unit.): Brian Mayer, brianmayer@arizona.edu
- If known, list the members of the certificate oversight committee for this certificate. Note: undergraduate certificate oversight committees shall consist of a minimum of 3 members, 2 of which are faculty and at least one of the 2 is participating faculty in the certificate program. The oversight committee is responsible for 1) qualifications of participating faculty, 2) coordination of admissions recommendations with the Office of Admissions, and 3) curricular changes: NA

IX. REQUIRED SIGNATURES

Program Director/Main Proposer (print name and title): Charles Gomez, Associate Professor, School of Sociology

Program Director/Main Proposer signature:

Date: August 25 2025

A handwritten signature in black ink, appearing to be 'CG', written over a horizontal blue line.

Department Head (print name and title): Erin Leahey, Professor and Director, School of Sociology

Department Head's signature:

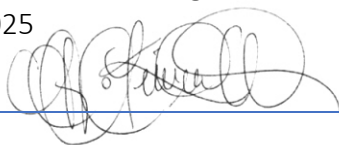
Date:

A handwritten signature in black ink, 'Erin Leahey', written over a horizontal blue line.

Associate/Assistant Dean (print name): Amy C. Kimme Hae, Senior Associate Dean, Academic Affairs & Student Success, College of Social and Behavioral Sciences

Associate/Assistant Dean's signature:

Date: 9/11/2025

A handwritten signature in black ink, appearing to be 'AKH', written over a horizontal blue line.

Dean (print name): Lori Poloni-Staudinger, Dean, College of Social and Behavioral Sciences

Dean's signature:

Date: 9/11/2025

A handwritten signature in black ink, 'Lori Poloni-Staudinger', written over a horizontal blue line.



BUDGET PROJECTION FORM

Name of Proposed Program or Unit:									
Minor in Computational Social Science	Projected								
Budget Contact Person: Beth Stahmer	1st Year 20 26 - 2027	2nd Year 2027 - 2028	3rd Year 2029 - 2030						
METRICS									
Net increase in annual college enrollment UG	10	20	30						
Net increase in college SCH UG	75	150	225						
Net increase in annual college enrollment Grad									
Net increase in college SCH Grad									
Number of enrollments being charged a Program Fee									
New Sponsored Activity (MTDC)									
Number of Faculty FTE				*no additional faculty needed					
FUNDING SOURCES									
Continuing Sources									
UG Revenue									
Grad Revenue									
Program Fee Revenue (net of revenue sharing)									
F and A Revenues									
Reallocation from existing College funds (attach description)									
Other Items (attach description)									
Total Continuing	\$ -	\$ -	\$ -						
One-time Sources									
College fund balances									
Institutional Strategic Investment									
Gift Funding									
Other Items (attach description)									
Total One-time	\$ -	\$ -	\$ -						
TOTAL SOURCES	\$ -	\$ -	\$ -						
EXPENDITURE ITEMS									
Continuing Expenditures									
Faculty				*No new expenses. The existing SOC faculty will teach additional undergraduate courses to support this Minor, with support from participating units.					
Other Personnel (advisors, program directors, etc.)									
Employee Related Expense									
Graduate Assistantships									
Other Graduate Aid									
Operations (materials, supplies, phones, etc.)									
Additional Space Cost									
Other Items (attach description)									
Total Continuing	\$ -	\$ -	\$ -						
One-time Expenditures									
Construction or Renovation									
Start-up Equipment									
Replace Equipment									
Library Resources									
Other Items (attach description)									
Total One-time	\$ -	\$ -	\$ -						
TOTAL EXPENDITURES	\$ -	\$ -	\$ -						
Net Projected Fiscal Effect	\$ -	\$ -	\$ -						



Computational Social Science Minor
New Academic Program
PEER COMPARISON

Program name, degree, and institution	Proposed UA Program	Computational Social Science Minor; Northeastern University		Computational Social Science Minor, University of California San Diego
Completions for last two years, <u>MAJORS only (can be found on market data report)</u>		Fall 2018 Semester	5	113 total annually enrolled for AY 2024-2025
		Fall 2019 Semester	10	
		Fall 2020 Semester	15	
		Fall 2021 Semester	14	
		Fall 2022 Semester	16	
		Fall 2023 Semester	20	
		Fall 2024 Semester	18	
		Grand Total		
Program Description	The proposed minor in Computational Social Science (CSS) at the University of Arizona requires 18 units to provide students with the skills to apply computational and analytical techniques to social science questions. The curriculum is built on a foundation of social science, requiring courses in introductory CSS (using Python), social research methods, and a	This minor introduces and develops the essential skills for employing mathematical, formal, and computational methods in the social sciences. Students completing this minor will have a grasp of the fundamentals necessary for pursuing more in-depth studies in the emerging fields of computational social science and big data. The foundational courses emphasize skills in probability, statistics, and introductory programming. Other courses focus on the application of formal and computational methods in the social sciences including digital analysis of texts, maps, and networks. An additional elective provides breadth in social scientific studies of computation or		The interdisciplinary minor in Computational Social Science (CSS) at UC San Diego combines formal causal models from the Social Sciences with statistics, programming, and large-scale data analysis. Learning Objectives include: • Provide a robust curriculum that gives students the skills to understand and apply computational and analytic techniques to theoretical and empirical questions in the social sciences. • Understand the ethical constraints associated with computational social science and large-scale human data.

	foundational social science course. Students have the flexibility to choose a statistics course (using R) that aligns with their math background and can select from a wide array of methods electives from Sociology, Government, Geography, Linguistics, Data Science, and Information Science.	the foundational principles of logic and computation.	• Provide extensive statistical training and application of modeling, programming, and data analysis techniques. • Combine large data with formal, causal social science models. • Expand applied learning opportunities in Computational Social Science to widen the possible career paths for undergraduates.
Target Careers from Market Data Report		NA	<i>From UCSD website:</i> Computational social science provides students with the tools necessary to analyze big data in relation to topics in social science. Examples of potential jobs include: • Computational/Quantitative Social Scientist • Computational Behavioral Scientist • Social Science Analyst • Quantitative Social Science Consultant • Research Scientist • Data Scientist • Quantitative User Experience Researcher • Experimentation and Analytics Researcher Sample employers include the following: • Tech companies (Google, Facebook) • Consulting firms (Booz Allen Hamilton)

			• Government agencies (NSA, CIA) • Start-ups (Sorter) • Educational Institutions (UC San Diego, University of Chicago, Stanford) • Analytics firms (Gallup, People Analytics) • Non-profits (Environmental Defense Fund, Unify Project)
Minimum # of units required	18 units (6 courses)	15 unit-equivalents (5 courses)	21 unit-equivalents (7 courses)
Special requirements to gain admission to program? (i.e. pre-requisites, GPA, application, etc.)	No. Individual courses may have prerequisites.	No	No
UG - Level of Math required (if applicable)	Flexible: Ranges from introductory statistics with no math prerequisite to upper-division statistics requiring Calculus II and Linear Algebra.	Moderate: College Statistics or higher	Recommended: College Calculus
Internship, practicum, or applied/experiential requirements? If yes, describe.	No	No	No
Additional requirements	None	None	None

Additional questions:

1. How does the proposed program align with peer programs? Briefly summarize the similarities between the proposed program and peers, which could include curriculum, overall themes, faculty expertise, intended audience, etc.

The proposal program aligns closely with the two peer comparisons. The CSS minor at UCSD presents the closest similarities, with a clear grounding in questions and theories in the social sciences as the guiding structure of the minor with required math and computer programming skills nested within the social science requirements. The Northeastern minor includes the social science courses as well as math and computer programming but is less clear on the primacy of the social science requirements. Both curricula are similar in the requirement of basic computer programming courses, often requiring math prerequisites, with a variety of social science

elective courses. The intended audiences are also similar in that they allow two essential groupings of students to easily enter the minor: 1) social science majors with comparatively less computer programming experience, and 2) computer science or programming majors with comparatively less social science experience.

2. How does the proposed program stand out or differ from peer programs? Briefly summarize the differences between the proposed program and peers, which could include curriculum, overall themes, faculty expertise, intended audience, etc.

The proposed CSS minor differs most distinctly from the program at Northeastern University, where the foundational courses are located in Math and Information Science with electives drawing on the social sciences. There, the skillset associated with the minor focuses more on programming skills than on core social science questions that are driven by theory-driven research approaches, as we intend to implement here at the University of Arizona. At Northeastern, the intended audience would appear to be more focused on students currently in computer or advanced mathematical sciences who would like to develop a skillset to include social science, as opposed to a wider audience that begins their introduction to CSS from a foundation of social science theory and research design.

3. How do these differences make this program more applicable to the target student population and/or a better fit for the University of Arizona?

Housing a CSS minor in the social sciences at the University of Arizona is especially useful for students due to several institution-specific strengths and opportunities that align well with this approach. As a large R1 university, the proposed design of the CSS minor would leverage our strength in interdisciplinary research and invite undergraduates from virtually any College to participate rather than focus on a smaller subset.

The program's structure is uniquely flexible, making it highly accessible to the intended student audience, which includes both social science majors with less programming experience and STEM majors with less social science experience. Unlike the peer programs, the proposed minor offers multiple pathways to fulfill the statistics requirement, allowing students to enter with no prior college-level math by taking SOC 375, or to apply credit from advanced, calculus-based statistics courses, such as DATA 363. This flexibility ensures that students from any background can seamlessly integrate the minor into their studies.

Furthermore, the proposed minor is genuinely interdisciplinary, drawing on a vast and diverse list of elective courses from at least four different colleges. Students can choose from methods courses offered in Sociology, the School of Government and Public Policy (SGPP), the School of Geography, Development, and Environment (SGDE), Linguistics, Mathematics and Data Science, and the College of Information Science (InfoSci). This wide array of options allows students to tailor the minor to their specific interests and career goals while leveraging the full breadth of the University of Arizona's academic strengths as a leading R1 university.

Finally, by grounding the curriculum in the social sciences—requiring core courses like *Introduction to Computational Social Science* and *Social Research Methods* from the Sociology department—the program ensures that all students develop a strong foundation in theory-

driven research questions. This approach differs from programs like Northeastern's, which is more heavily weighted toward students already proficient in computer science. This makes the proposed minor an ideal fit for creating well-rounded scholars and practitioners who can thoughtfully apply computational tools to complex social issues.



Course Use/Collaboration/Concern Form

Please use this form to notify other colleges that your proposed new program intends to use course(s) under their ownership; has identified potential avenues for interdisciplinary collaboration; and/or wants to hear their concerns about the creation of this program.

Note: Requesting college should provide this request to leadership in unit who owns courses. Responding unit should respond within 10 business days from receipt. Lack of response after the 10 business days is presumed approval.

FOR REQUESTING COLLEGE:

- I. **Initiating College:** Social & Behavioral Sciences
- II. **Representative(s) making the request:** Charles Gomez, Associate Professor, School of Sociology
- III. **Planned proposed program:** Computational Social Science Minor
- IV. **Planned program start date:** Fall 2026
- V. **Courses planned to be included, belonging to college / departments:** College of Information Science

FOR REVIEWING COLLEGE:

- 1. ISTA 116: Statistical Foundations of the Information Age
Yes ☒ **No** ☐ **Conditionally** ☐: Under what conditions?
- 2. ISTA 130: Computational Thinking and Design
Yes ☒ **No** ☐ **Conditionally** ☐: Under what conditions?
- 3. ISTA 320 Applied Data Visualization
Yes ☒ **No** ☐ **Conditionally** ☐: Under what conditions?
- 4. ISTA 321: Data Mining and Discovery
Yes ☒ **No** ☐ **Conditionally** ☐: Under what conditions?
- 5. ISTA 350: Programming for Informatics Applications
Yes ☒ **No** ☐ **Conditionally** ☐: Under what conditions?
- 6. ISTA 421: Introduction to Machine Learning
Yes ☒ **No** ☐ **Conditionally** ☐: Under what conditions?
- 7. ISTA 455: Applied Natural Language Processing
Yes ☒ **No** ☐ **Conditionally** ☐: Under what conditions?

Course Use/Collaboration/Concern Form

VI. Parameters of Use (add rows as necessary):

Undergraduate/Graduate

Course #	Units	Description of use (i.e., gen ed, major core, emphasis, elective/selective)
ISTA 116	3	Inferential Statistics Core
ISTA 130	3	Elective
ISTA 320	3	Elective
ISTA 321	3	Elective
ISTA 350	4	Elective
ISTA 421	3	Elective
ISTA 455	3	Elective

VII. Expected Yearly Enrollment (add rows as necessary):

Course #	Units	Exp Enrollment for Yr 1	Exp Enrollment for Yr 2	Exp Enrollment for Yr 3
ISTA 116	3	3	7	10
ISTA 130	3	3	7	10
ISTA 320	3	3	7	10
ISTA 321	3	3	7	10
ISTA 350	4	3	7	10
ISTA 421	3	3	7	10
ISTA 455	3	3	7	10

VIII. Opportunities for Interdisciplinary Collaboration (leave blank if none):

IX. Concerns about Proposed Program (leave blank if none):

X. **Representative(s) reviewing request:** Who is representative reviewing the request? (Should be Associate Dean / Dean)

Michael McKisson, Associate Dean for Undergraduate Academic Affairs

Signature: _____  _____ Date: _____



Department of Linguistics
P.O. Box 210025
The University of Arizona
Tucson, AZ 85721

Thursday, April 17, 2025

Dr. Brian Mayer
Director of Undergraduate Studies and Professor, School of Sociology

Dr. Charles Gomez
Associate Professor, School of Sociology

Dear Drs. Mayer and Gomez,

The Department of Linguistics in the College of Social and Behavioral Sciences (SBS) is pleased to support the School of Sociology's proposal for a new minor in Computational Social Science (CSS). This new minor comes at an important time for the University of Arizona undergraduate body, as today's businesses, governments, and non-profits are increasingly relying on data to inform decisions. A CSS minor can provide students with the skills to analyze and model social systems, trends, and behaviors, making them attractive candidates for roles in data science, policy-making, market research, and more.

We are also happy to support the inclusion of our current courses:

- LING 388: Language and Computers
- LING 408: Computational Techniques for Linguists
- LING 438: Computational Linguistics
- LING 439: Statistical Natural Language Processing

These courses will support the CSS minor as elective options. And in the future, we look forward to further discussions about additional opportunities to foster undergraduate opportunities related to computational social science.

Sincerely,

Dr. Natasha Warner
Department Head, Department of Linguistics





Department of Mathematics
617 North Santa Rita Avenue
University of Arizona
Tucson, Arizona 85721-0089

Thursday, April 10, 2025

Dr. Brian Mayer
Director of Undergraduate Studies and Professor, School of Sociology

Dr. Charles Gomez
Associate Professor, School of Sociology

Dear Drs. Mayer and Gomez,

The Department of Mathematics in the College of Science is pleased to support the School of Sociology's proposal for a new minor in Computational Social Science (CSS). This new minor comes at an important time for the University of Arizona undergraduate body, as today's businesses, governments, and non-profits are increasingly relying on data to inform decisions. A CSS minor can provide students with the skills to analyze and model social systems, trends, and behaviors, making them attractive candidates for roles in data science, policy-making, market research, and more.

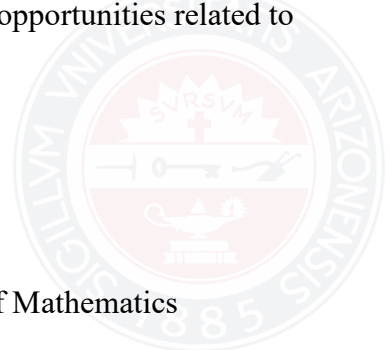
We are also happy to support the inclusion of our current courses:

- DATA 201 Foundations of Data Science
- DATA 363 Introduction to Statistical Methods
- DATA 375 Introduction to Statistical Computing
- DATA 467 Introduction to Applied Linear Models
- DATA 474 Introduction to Statistical Machine Learning

These courses will support the CSS minor as elective options, and, in the case of DATA 363, as an option for one of the required courses. And in the future, we look forward to further discussions about additional opportunities to foster undergraduate opportunities related to computational social science.

Sincerely,

Patrick Shipman
Acting Associate Head of Undergraduate Programs, Department of Mathematics





School of Geography, Development, and Environment
ENR2 Building, South 4th floor
1064 E. Lowell Street
University of Arizona, Tucson, Arizona 85721

Wednesday, March 19, 2025

Dr. Brian Mayer
Director of Undergraduate Studies and Professor, School of Sociology

Dr. Charles Gomez
Associate Professor, School of Sociology

Dear Drs. Mayer and Gomez,

The School of Geography, Development, and Environment (SGDE) in the College of Social and Behavioral Sciences (SBS) is pleased to support the School of Sociology's proposal for a new minor in Computational Social Science (CSS). This new minor comes at an important time for the University of Arizona undergraduate body, as today's businesses, governments, and non-profits are increasingly relying on data analysis to inform decisions. A CSS minor can provide students with the skills to analyze and model social systems, trends, and behaviors, making them attractive candidates for roles in data science, policy-making, market research, and more. The minor will provide an additional opportunity for our majors who are seeking to expand their skills and certifications in this area.

We are also happy to support the inclusion of our current courses:

- GEOG 330 – Introduction to Remote Sensing
- GEOG 222 – Working with Numeric, Spatial, and Visual Data

These courses will support the CSS minor as elective options. And in the future, we look forward to further discussions about additional opportunities to foster undergraduate opportunities related to computational social science.

Sincerely,

Dereka Rushbrook, Ph.D.
Director of Undergraduate Studies
School of Geography, Development, and Environment



COLLEGE OF SOCIAL AND BEHAVIORAL SCIENCES
**School of Government
and Public Policy**

School of Government & Public Policy
315 Social Science
P.O. Box 210027
Tucson, AZ 85721-0027
Tel: (520) 621-7600
Fax: (520) 621-5051
<http://sgpp.arizona.edu>

Wednesday, March 12, 2025

Dr. Brian Mayer
Director of Undergraduate Studies and Professor, School of Sociology

Dr. Charles Gomez
Associate Professor, School of Sociology

Dear Drs. Mayer and Gomez,

The School of Government and Public Policy in the College of Social & Behavioral Studies is pleased to support the School of Sociology's proposal for a new minor in Computational Social Science (CSS). This new minor comes at an important time for the University of Arizona undergraduate body, as today's businesses, governments, and non-profits are increasingly relying on data to inform decisions with social and political considerations and impacts. A CSS minor will provide students with the skills to analyze and model social systems, trends, and behaviors, making them attractive candidates for professional roles in data science, policy analysis, market research, and more.

We are also happy to support the inclusion of our current courses:

- POL 397B: The Origins of Data in Politics and Policy
- PA 403: Political Networks
- POL 424: Politics in the Digital Age
- PA 472: Digital Research in Politics and Policy (not yet in the catalog but soon to be co-convened with PA 572)

These courses will support the CSS minor as elective options. And in the future, we look forward to further discussions about additional opportunities to foster undergraduate opportunities related to computational social science.

Sincerely,

A handwritten signature in black ink, appearing to read 'Yotam Shmargad'.

Yotam Shmargad
Associate Professor
Director of Undergraduate Studies
School of Government and Public Policy





Course Use/Collaboration/Concern Form

Please use this form to notify other colleges that your proposed new program intends to use course(s) under their ownership; has identified potential avenues for interdisciplinary collaboration; and/or wants to hear their concerns about the creation of this program.

Note: Requesting college should provide this request to leadership in unit who owns courses. Responding unit should respond within 10 business days from receipt. Lack of response after the 10 business days is presumed approval.

FOR REQUESTING COLLEGE:

- I. **Initiating College:** Social & Behavioral Sciences
- II. **Representative(s) making the request:** Charles Gomez, Associate Professor, School of Sociology
- III. **Planned proposed program:** Computational Social Science Minor
- IV. **Planned program start date:** Fall 2026
- V. **Courses planned to be included, belonging to college / departments:**

FOR REVIEWING COLLEGE:

- 1. POL 397A The Origins of Data in Politics and Policuy
Yes ☒ **No** ☐ **Conditionally** ☐: Under what conditions?
- 2. PA 403 Political Networks
Yes ☒ **No** ☐ **Conditionally** ☐: Under what conditions?
- 3. POL 424 Politics in the Digital Age
Yes ☒ **No** ☐ **Conditionally** ☐: Under what conditions?
- 4. PA 472 Digital Research in Politics and Policy
Yes ☒ **No** ☐ **Conditionally** ☐: Under what conditions?
- 5. GEOG 330 Introduction to Remote Sensing
Yes ☒ **No** ☐ **Conditionally** ☐: Under what conditions?
- 6. GEOG 222 Working with Numeric, Spatial, and Visual Data
Yes ☒ **No** ☐ **Conditionally** ☐: Under what conditions?
- 7. LING 388 Language and Computers
Yes ☒ **No** ☐ **Conditionally** ☐: Under what conditions?
- 8. LING 408 Computational Techniques for Linguists
Yes ☒ **No** ☐ **Conditionally** ☐: Under what conditions?
- 9. LING 438 Computational Linguistics
Yes ☒ **No** ☐ **Conditionally** ☐: Under what conditions?



Course Use/Collaboration/Concern Form

10. LING 439 Statistical Natural Language Processing

Yes ☐ No ☐ Conditionally ☐: *Under what conditions?*

VI. Parameters of Use (add rows as necessary):

Undergraduate/Graduate

Course #	Units	Description of use (i.e., gen ed, major core, emphasis, elective/selective)
POL 397A	3	Elective
PA 403	3	Elective
POL 424	3	Elective
PA 472	3	Elective
GEOG 330	3	Elective
GEOG 222	3	Elective
LING 339	3	Elective
LING 408	3	Elective
LING 438	3	Elective
LING 439	3	Elective

VII. Expected Yearly Enrollment (add rows as necessary):

Course #	Units	Exp Enrollment for Yr 1 (2026-2027)	Exp Enrollment for Yr 2 (2027 – 2028)	Exp Enrollment for Yr 3 (2028 – 2029)
POL 397A	3	3	7	10
PA 403	3	3	7	10
POL 424	3	3	7	10
PA 472	3	3	7	10
GEOG 330	3	3	7	10
GEOG 222	3	3	7	10
LING 339	3	3	7	10
LING 408	3	3	7	10
LING 438	3	3	7	10
LING 439	3	3	7	10

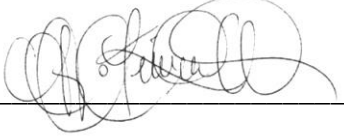
VIII. Opportunities for Interdisciplinary Collaboration (leave blank if none):

IX. Concerns about Proposed Program (leave blank if none):



Course Use/Collaboration/Concern Form

- X. **Representative(s) reviewing request:** Who is representative reviewing the request? (Should be Associate Dean / Dean)

Signature:  _____ Date: 8/26/2025 _____



College of Information Science
Harvill Building
1103 E 2nd Street
4th Floor
University of Arizona
Tucson, Arizona 85721

Monday, August 18, 2025

Dr. Brian Mayer
Director of Undergraduate Studies and Professor, School of Sociology

Dr. Charles Gomez
Associate Professor, School of Sociology

Dear Drs. Mayer and Gomez,

I am writing to express our enthusiastic support for the new undergraduate minor in Computational Social Science. In our increasingly data-driven world, students need the technical skills to analyze complex social phenomena using computational methods. This minor fills a critical gap in our curriculum by providing training in Python and R programming languages along with methodological foundations, preparing our graduates to address pressing societal challenges through evidence-based approaches. The minor's structure offers distinct advantages to University of Arizona students, allowing them to complement their primary majors with in-demand computational skills without extending their time to graduation. Particularly valuable is the program's interdisciplinary nature, drawing courses from multiple colleges including Social and Behavioral Sciences, Science, and Information Science. Our college is especially proud to contribute to this collaborative initiative, as it aligns with our mission to bridge technical expertise with real-world applications. We are ready to support this program through advising resources, research opportunities, and potential pathways to our graduate programs, and look forward to the work our students will produce through this valuable academic offering.

We are also happy to support the inclusion of our current courses:

- ISTA 116: Statistical Foundations of the Information Age
- ISTA 130: Computational Thinking and Doing
- ISTA 320: Applied Data Visualization
- ISTA 321: Data Mining and Discovery
- ISTA 322: Data Engineering
- ISTA 350: Programming for Informatics Applications
- ISTA 421: Introduction to Machine Learning
- ISTA 455: Applied Natural Language Processing

These courses will support the CSS minor as elective options, and, in the case of ISTA 116, as an option for one of the required courses. And in the future, we look forward to further discussions about additional opportunities to foster undergraduate opportunities related to computational social science.

Sincerely,



Michael McKisson
Associate Dean for Undergraduate Academic Affairs
College of Information Science





Course Use/Collaboration/Concern Form

Please use this form to notify other colleges that your proposed new program intends to use course(s) under their ownership; has identified potential avenues for interdisciplinary collaboration; and/or wants to hear their concerns about the creation of this program.

Note: Requesting college should provide this request to leadership in unit who owns courses. Responding unit should respond within 10 business days from receipt. Lack of response after the 10 business days is presumed approval.

FOR REQUESTING COLLEGE:

- I. **Initiating College:** Social & Behavioral Sciences
- II. **Representative(s) making the request:** Charles Gomez, Associate Professor, School of Sociology
- III. **Planned proposed program:** Computational Social Science Minor
- IV. **Planned program start date:** Fall 2026
- V. **Courses planned to be included, belonging to college / departments:**

FOR REVIEWING COLLEGE:

- 1. DATA 201 Foundations of Data Science
Yes ☐ **No** ☐ **Conditionally** ☐: Under what conditions?
- 2. DATA 375 Introduction to Statistical Computing
Yes ☐ **No** ☐ **Conditionally** ☐: Under what conditions?
- 3. DATA 467 Introduction to Applied Linear Modeling
Yes ☐ **No** ☐ **Conditionally** ☐: Under what conditions?
- 4. DATA 474 Introduction to Statistical Machine Learning
Yes ☐ **No** ☐ **Conditionally** ☐: Under what conditions?

VI. Parameters of Use (add rows as necessary):

Undergraduate/Graduate

Course #	Units	Description of use (i.e., gen ed, major core, emphasis, elective/selective)
DATA 201	3	Elective
DATA 375	3	Elective
DATA 467	3	Elective
DATA 474	3	Elective

Course Use/Collaboration/Concern Form

VII. **Expected Yearly Enrollment (add rows as necessary):**

Course #	Units	Exp Enrollment for Yr 1	Exp Enrollment for Yr 2	Exp Enrollment for Yr 3
DATA 201	3	3	7	10
DATA 375	3	3	7	10
DATA 467	3	3	7	10
DATA 474	3	3	7	10

VIII. **Opportunities for Interdisciplinary Collaboration (leave blank if none):**

IX. **Concerns about Proposed Program (leave blank if none):**

X. **Representative(s) reviewing request:** Who is representative reviewing the request? (Should be Associate Dean / Dean)

Signature:



Date: 8/18/25

Request to Establish New Academic Minor Program

Please complete all fields. Boxes may be expanded to accommodate longer responses. Clarifying field descriptions can be found below. Note: This form is not required for a new minor program that has the same name as an existing major program and the courses constituting the minor are drawn from approved courses for that major.

University: University of Arizona

Name of Proposed Academic Minor Program: Computational Social Science
Academic Department: School of Sociology
Geographic Site: University of Arizona Main Campus
Instructional Modality: In Person
Total Credit Hours: 18 credit hours
Proposed Inception Term: Fall 2026
Brief Program Description: The Computational Social Science (CSS) minor equips students with the cutting-edge skills to analyze massive datasets and understand complex social phenomena in the digital age. This interdisciplinary program bridges the gap between social science and data science, training students to use computational tools to explore human behavior, social networks, and institutional patterns. Students will learn programming, gain hands-on experience with techniques such as machine learning and network analysis, and work with real-world social data. The curriculum not only focuses on technical proficiency but also emphasizes critical engagement with the social and ethical impacts of big data and algorithmic decision-making. This minor is ideal for students from any discipline who are curious about how data is reshaping our world and want to apply quantitative reasoning to pressing social questions.
Learning Outcomes and Assessment Plan: Learning Outcome #1: Apply computational techniques to analyze social behaviors, networks, and institutions, while critically evaluating data validity, methodological assumptions, and ethical considerations in computational research. (Knowledge of Computational Approaches to Social Phenomena) Competencies: Computational thinking; critical analysis including synthetic, analytical, and comparative reasoning, data literacy Assessment Methods: SOC 301A Final project (direct) and student exit survey (indirect) Learning Outcome #2: Collect, process, and analyze large-scale social data using computational tools and models, and interpret results with attention to data bias, measurement errors, and algorithmic transparency. (Proficiency in Data-Driven Social Research) Competencies: Processing data, programming in R/Python, evaluating models, critical reasoning

Assessment Methods: Final project (direct) and student exit survey (indirect).

Learning Outcome #3: Critically evaluate the social, political, and ethical impacts of computational methods--such as artificial intelligence, big data, and algorithmic decision-making--in research and policy, with particular attention to issues of social inequality, governance, knowledge production, the role of evidence, power structures, and ethical trade-offs (**Critical Engagement with the Social Impact of Computational Methods**)

Competencies: Critical analysis including synthetic, analytical, and comparative reasoning; ethical reasoning, evaluating evidence

Assessment Methods: Final Project: Evaluation of the in-class presentation and written report, which require an overview of the research's key findings and broader significance. The written submission must also contain a reflection on the significance and limitations of the findings and a statement of each member's contributions

Projected Enrollment for the First Three Years: Year 1: 10, Year 2: 20, Year 3: 30

Evidence of Market Demand:

The Computational Social Science (CSS) minor is designed to address a significant and growing demand in both academia and industry for professionals who can blend social scientific inquiry with advanced data analysis skills. The modern world generates unprecedented amounts of social data, and this program provides students with the essential theoretical and technical toolkit to analyze this "big data," preparing them for careers in data-driven policy making, market research, urban planning, and the tech sector.

The need for this minor is evidenced by strong student interest in the diverse set of existing courses that form its curriculum, which are drawn from Sociology, Political Science, Data Science, Geography, and Information Science. The projected enrollment growth from 10 to 30 students over the first three years is based on this existing demand for data-focused social science courses. Furthermore, the core introductory course, SOC 301A, is specifically designed to be accessible to students without a background in programming or math, widening the pipeline of students who can develop these valuable skills. By formalizing this curriculum, the university can provide a clear pathway for students to gain a competitive advantage in a labor market that increasingly values data literacy and the ability to interpret complex human behavior.

While positions in "Data Science" are rapidly growing, this minor offers a distinct and complementary skill set that is increasingly vital in the job market. Unlike a pure data science program, which focuses primarily on computational and statistical techniques, the Computational Social Science minor trains students to apply these tools to understand complex human behavior and societal patterns. This integrated approach prepares graduates for emerging roles that require not just technical proficiency, but also a deep, domain-specific understanding of social, political, and economic contexts. Employers in the tech sector, policy-making, and market research are recognizing the need for professionals who can go beyond the numbers to provide nuanced interpretations and ethically-informed insights into the data, giving our students a significant competitive advantage for these specialized, high-demand positions.

Labor market analyses were conducted using the Lightcast program to consider demand for the CSS minor both in terms of comparable degree programs and employment opportunities

post-graduation from the University of Arizona. Since Computational Social Science is a relatively new field within the social sciences, there are relatively few comparable programs identified by Lightcast to model our potential for growth. We reviewed two NAICS job classification codes – 30.799 Data Science and 45.0102 Research Methodology and Quantitative Methods – but acknowledge that both touch upon CSS, but do not fully capture the potential we see in this industry for University of Arizona undergraduates.

The U.S Bureau of Labor Statistics projects that employment of Data Scientists will grow some 36 percent from 2023 to 2033 at a rate considered much faster than all other occupations. These potential employment opportunities are well-paying positions, estimated to be near a median of \$112,000 a year. Jobs related to Research Methodology and Quantitative Methods fare slightly less positive, but in the 7 percent to 10 percent growth rate as well. The Lightcast estimates for job growth for Data Science includes a 10 percent growth estimate nationally and an 8 percent estimate for the Southwest region. Specific skillsets taught in the CSS minor, such as programing in Python and R, are in very high demand and are seen by the Lightcast program as rapidly growing in demand in published job advertisements.

Similar Programs Offered at Arizona Public Universities: To the best of our knowledge, no other undergraduate program exists within Arizona public universities that are perfectly similar. At ASU for example, a Masters of Arts in Social Data Science is available through the New College of Interdisciplinary Arts & Sciences. Internally, there are some similarities, though not overlap, with the College of Information Science.

New Resources Required? (i.e., faculty and administrative positions; infrastructure, etc.): No new resources are required.

Plan to Request Program/College Fee? NO

Estimated Amount: NA

Fee Justification: NA

Specialized Accreditation? NO

Accreditor: No

Executive Director Signature: _____

Date: _____